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ABSTRACT

A study was conducted to compare the effects of study skills instructions on students' study behaviors and attitudes when such instructions were offered through study guides, class instructions, and discussions, or via computer assisted instruction (CAI). Undergraduate students were separated into three groups which (1) read study skills guides and received instructions on these skills during regular classes; (2) received instructions on study skills through CAI; and (3) served as a control. All subjects responded to the Survey of Study Habits and Attitudes (SSHA) three times during the semester. Trend analyses on the seven SSHA measures showed no differences among the trials and interactions, and scores on the trials increased over the semester. Reverse patterns of perceptions on study habits were found for CAI and control groups. Scores for the CAI group showed upward shifts and scores for the control group showed downward shifts. Scores for the class instruction group, when compared with the CAI and control groups, did not change over the semester. It was concluded that the CAI was a superior method of providing study skills instruction when compared to the class instruction approach. (Author/CMV)

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A COMPARISON OF CAI AND CLASS INSTRUCTION APPROACHES ON STUDY SKILLS[1]

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presented

at the

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Running head: A Comparison

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ABSTRACT

The purpose of this study was to compare the effects of study skills instructions on students' study behaviors and attitudes when such instructions were offered through (a) study guides, class instructions and discussions and (b) computer-assisted instruction (CAI). Three groups of undergraduates served as subjects. The groups were: (a) 97 students who read study skills guides and received instructions on these skills during regular classes, (b) 88 students who received instructions on study skills through CAI, and (c) 67 students who did not receive any guides, instructions, or CAI on study skills. All subjects responded to the Survey of Study Habits and Attitudes (SSHA) three times during the semester. Measures on the SSHA were used to determine differences among the groups and changes over the semester on study habits and attitudes. Trend analyses on the seven SSHA measures showed no significant differences among the trials and interactions. Scores on the trials increased over the semester. Reverse patterns of perceptions on study habits were found for CAI and control groups. Scores for the CAI group showed upward shifts and scores for the control group showed downward shifts. Scores for the class instruction group, when compared with the CAI and control groups, did not change too much over the semester. It was concluded that the CAI was a superior method of providing study skills instructions when compared to the class instruction approach. Much of the success of the CAI offering was attributed to the program that was developed.

Numerous research studies (Briggs, Tosi and Morley, 1971; Brown, 1965 and 1974; Brown, Wehe, Zunker and Haslam, 1971; Brown and Zunker, 1966; Gadzella, 1979; Gadzella, Goldston and Zimmerman, 1977; Haslam and Brown, 1968; Light and Alexakos, 1970; Jones, Trimble and Altmann, 1970; Rubin and Cohen, 1974; Tarpey and Harris, 1979) show that instructions and/or counseling on study skills and attitudes have significantly affected students' study behavior and attitudes and academic performances. Recently, educators and researchers have been concerned with how this information on study skills and attitudes could be more effectively and efficiently provided to all students.

Various methods have been used to disseminate the information on study skills. Researchers (Gadzella, 1977; Haslam and Brown, 1968; Tarpey and Harris, 1979) have shown that when students who received information on study skills through class instructions and discussions reported significantly higher scores on study skills inventories than students who did not receive such instructions. Some researchers (Bedner and Wienberg, 1970; Carkhuff, 1973) felt that group counseling was a more effective approach to study skills because it added an interpersonal dimension. Other investigators (Brown, 1965; Brown, et al., 1971; Gadzella, 1979; Zunker and Brown, 1966) indicated that the individual counseling approach was more effective because students were more involved and learning was more meaningful to them. However, the individualized counseling approach is too time-consuming. What is more, it is difficult to offer well-designed programs on an individual basis to all students. The question raised was whether another approach can be devised whereby instructions on study skills could be offered effectively and efficiently to all students who want it.

Computer-assisted instruction (CAI) modules on study skills were developed with the hope that the computer could present the materials to students on

an individual basis. It was essential to investigate whether the computer could do as good of a job or better than the previous approaches that have been used in dissemenating study skills instructions.

The purpose of this study was to compare the effects of study skills instructions on students' behaviors and attitudes when such instructions were offered through (a) study guides, class instructions and discussions and (b) CAI.

METHOD

Subjects

Three groups of undergraduates, enrolled in psychology classes, served as subjects for the study. The three groups were: (a) 97 students who read study skills guides and received instructions on such skills during regular class sessions, (b) 88 students who received information on study skills through CAI, and (c) 67 students who did not receive any study guides, instructions, or CAI on study skills.

Procedure

All these students signed a research release in which they indicated their willingness to participate in the study and their permission to use tests scores and data for research purposes. All students responded to a study skills inventory three times during the semester. During one semester, students enrolled in several classes were each given a copy of the Student's Guides to Effective Study (Brown, 1970). The Guides include ten topics related to developing effective study skills. These students read one study skills topic per week, received instructions and were quizzed on it during regular class sessions.

Eleven CAI study skills modules were developed on the topics presented in the Guides. In another semester, students were randomly assigned to CAI and

control groups. Students in the CAI group completed one CAI module on study skills per week. Students, in all groups, who completed the activities for the study, received bonus points in the course they were enrolled.

The Survey of Study Habits and Attitudes, SSHA, (Brown and Holtzman, 1965) was the instrument used to collect the data. The SSHA is a 100-item self-reporting inventory designed to measure students' behaviors as they are related to their study habits and attitudes. Seven measures can be derived from the responses to the SSHA. Four of these measures are primary scales: Delay Avoidance (DA), which measures the extent to which a student avoids delay and distraction; Work Methods (WM), which is an indicator of how effectively the student organizes the materials; Teacher Approval (TA), which discloses the student's general impressions of his teachers; and Educational Acceptance (EA), which is a representation of the student's agreement with the goals stated in education. When the scores of the four primary scales are added in various ways, three summated scales are obtained: Study Habits (SH), which is a combination of DA and WM scores; Study Attitudes (SA), which is a combination of TA and EA scores; and Study Orientation (SO), which is a combination of the four primary scales (DA, WM, TA, EA).

All subjects in the three groups responded to the SSHA three times during the semester (beginning, middle and end). The scores provided by the groups during the three responding occasions were analyzed using the trend analysis. In the analyses, the CAI, class instruction and control groups were treated as the main effects and their responses to the SSHA at three different occasions as the trial effects. For all SSHA scales yielding significant F - ratios, simple post - t tests were computed. To determine the source of the significant interactions, each cell mean was first adjusted for column and row effects.

RESULTS AND CONCLUSION

The means and standard deviations for all SSHA scales on the three responding occasions (trials) for the CAI, class instruction, and control groups are presented in Table 1. The F - ratios for the groups, trials and interactions are summarized in Table 2.

Insert Tables 1 and 2 about here

Group Differences

Data (Table 2) showed that the three groups did not differ significantly among themselves on any of the SSHA scales. However, one should keep in mind that when this type of analysis is used, the means for the trials for each group are averages and the groups are compared on those averages.

Trial Differences

The data (Table 2) showed that there were significant ($p < .01$) differences among the trials. Examination of the post-t tests showed significant ($p < .05$ or lower) differences between each of the paired trials with scores on each consecutive trial being higher. However, it should ne noted that in these analyses the means for the three groups on each trial were averaged and the comparisons were made on the averaged trials. To determine the directional changes during the semester for each group on each scale, one needs to examine the results of the interactions.

Interaction Differences

The data (Table 2) showed that the F - ratios were statistically significant ($p < .01$) for the interactions of all the SSHA scales. Post-t tests were computed for all F - ratios. To perceive more clearly the nature of the interactions and the changes for each group during the semester, the adjusted

means for the three trials are displayed. The results for the four primary scales are displayed in Figure 1 and for the three summated scales in Figure 2.

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Insert Figures 1 and 2 about here

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On each SSHA scale (Figures 1 and 2), the scores for the CAI group were low at the beginning of the semester and then consistently higher on the two consecutive responding occasions during the semester, reflecting upward shifts. Stated differently, as the subjects in the CAI group got a better understanding of effective study skills throughout the semester, they changed their perceptions and, hopefully, improved their study skills.

The situation for the control group was almost the reverse to that for the CAI group. On all SSHA scales, scores for the control group were high at the beginning of the semester and then lower for the two responding occasions, revealing downward shifts.

When the scores for class instruction group were compared to the scores of the CAI and control groups, the scores for the class instruction group did not change as much during the semester. However, on scales DA, WM, and SH scores were high at the beginning of the semester when compared to their scores during the middle and end of the semester. Their scores on TA, EA, and SA scales were low at the beginning of the semester, higher at mid-semester, and lower at the end of the semester.

The findings in the present study were similar to those of previous studies (Gadzella, 1979; Gadzella, et al., 1977; Haslam and Brown, 1968; Tarpey and Harris, 1979) when students who were given instructions and/or student-to-student counseling were compared with students in the control groups (who did not receive any instructions on study skills) reported significantly higher

scores on the SSHA. In addition, this study reveals the superiority of the CAI approach on study skills when compared with the class instruction approach.

It could be concluded from the data presented in this study that the CAI on study skills had a more significant affect on students' behaviors and attitudes than did the class instruction approach. The CAI approach is also more efficient to use, in that, study skills information can be available to all students at any time and at a minimum cost to the high school, college, or university. Good CAI programs are difficult to develop. Much of the success of this CAI study skills offering was attributed to the interesting and informational modules that were developed. These CAI modules can be purchased and used in any educational institution.

Based on previous research findings, it can be assumed that understanding of effective study skills could assist students in a better understanding, retention, and transfer of the subject matter that they attempt to learn. The importance of this investigation is that the CAI study skills modules can effectively and efficiently provide the information on study skills. It does mean that these CAI study skills are a panacea for all study skills instructions but that they can effectively and efficiently disseminate the information and assist students to develop more effective study skills.

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Table 1

Means and Standard Deviations on the Survey of Study Habits and Attitudes (SSHA) Scales on Three Trials for CAI, Class Instruction, and Control Groups

SSHA Scales	Trial	CAI		Class Instr.		Control	
		M	SD	M	SD	M	SD
Delay Avoidance	1	21.46	9.19	21.11	9.88	22.84	10.83
	2	25.67	10.26	22.14	11.24	22.37	10.90
	3	27.92	11.03	23.70	12.58	24.31	12.39
Work Methods	1	24.68	9.48	26.31	8.60	25.08	9.65
	2	28.74	10.21	28.52	9.93	26.27	9.63
	3	31.72	10.93	30.44	10.66	27.42	10.31
Teacher Approval	1	28.56	8.55	29.88	8.61	28.97	9.16
	2	32.00	7.80	31.88	9.21	27.63	10.03
	3	32.87	8.84	32.44	10.33	28.67	11.31
Educational Acceptance	1	28.60	8.05	28.14	8.13	29.18	9.25
	2	31.01	8.28	29.03	8.73	27.54	9.60
	3	32.65	9.18	30.16	9.96	28.94	9.60
Study Habits	1	46.22	17.03	47.11	17.19	47.91	18.71
	2	54.60	19.51	50.66	20.02	48.64	18.88
	3	59.75	21.03	54.23	22.43	51.88	20.78
Study Attitudes	1	57.39	15.29	57.63	15.58	58.15	17.32
	2	62.90	15.13	60.95	17.02	55.16	18.12
	3	65.56	16.95	62.60	19.38	57.61	19.50
Study Orientation	1	103.46	28.69	104.75	29.67	106.06	33.19
	2	117.61	31.91	111.61	35.16	103.83	34.30
	3	125.17	35.26	116.83	39.96	109.49	37.48

Table 2

F-Ratios for Trend Analyses on Survey of Study Habits and Attitudes (SSHA) Scales for Groups, Trials, and Interactions

SSHA Scales	F-Ratios		
	Groups df = 2/249	Trials df = 2/498	Interactions df = 4/498
Delay Avoidance	1.63	40.34**	8.25**
Work Methods	1.31	77.00**	6.29**
Teacher Approval	2.62	22.02**	7.50**
Educational Acceptance	1.54	17.61**	6.72**
Study Habits	1.02	73.05**	8.42**
Study Attitudes	1.88	24.14**	8.70**
Study Orientation	1.47	59.26**	10.59**

* $p =< .05$

** $p =< .01$

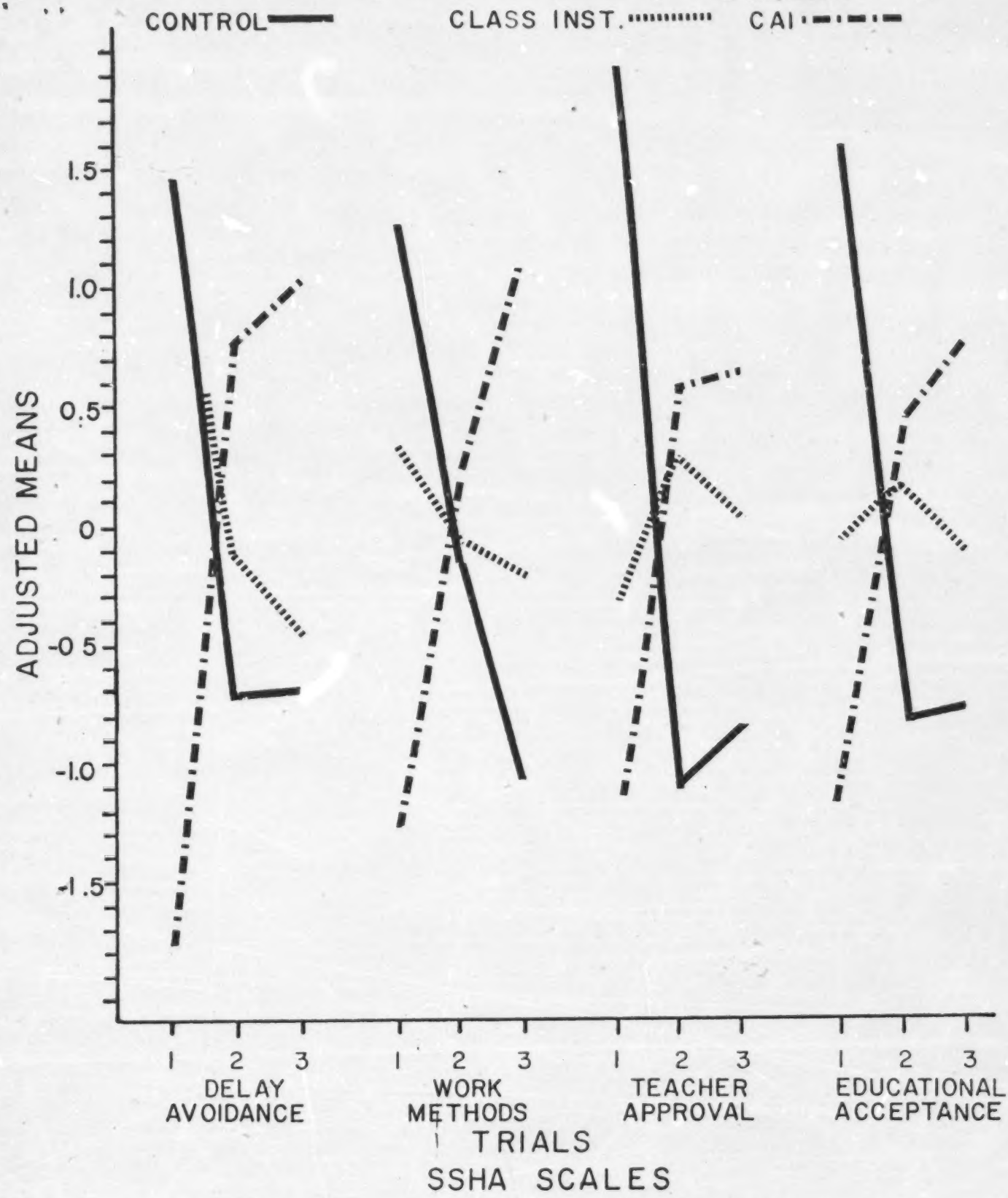

Figure 1: - Adjusted Means on Three Trials for Four Primary Scales of the Survey of Study Habits and Attitudes (SSHA) for CAI, Class Instruction, and Control Groups.

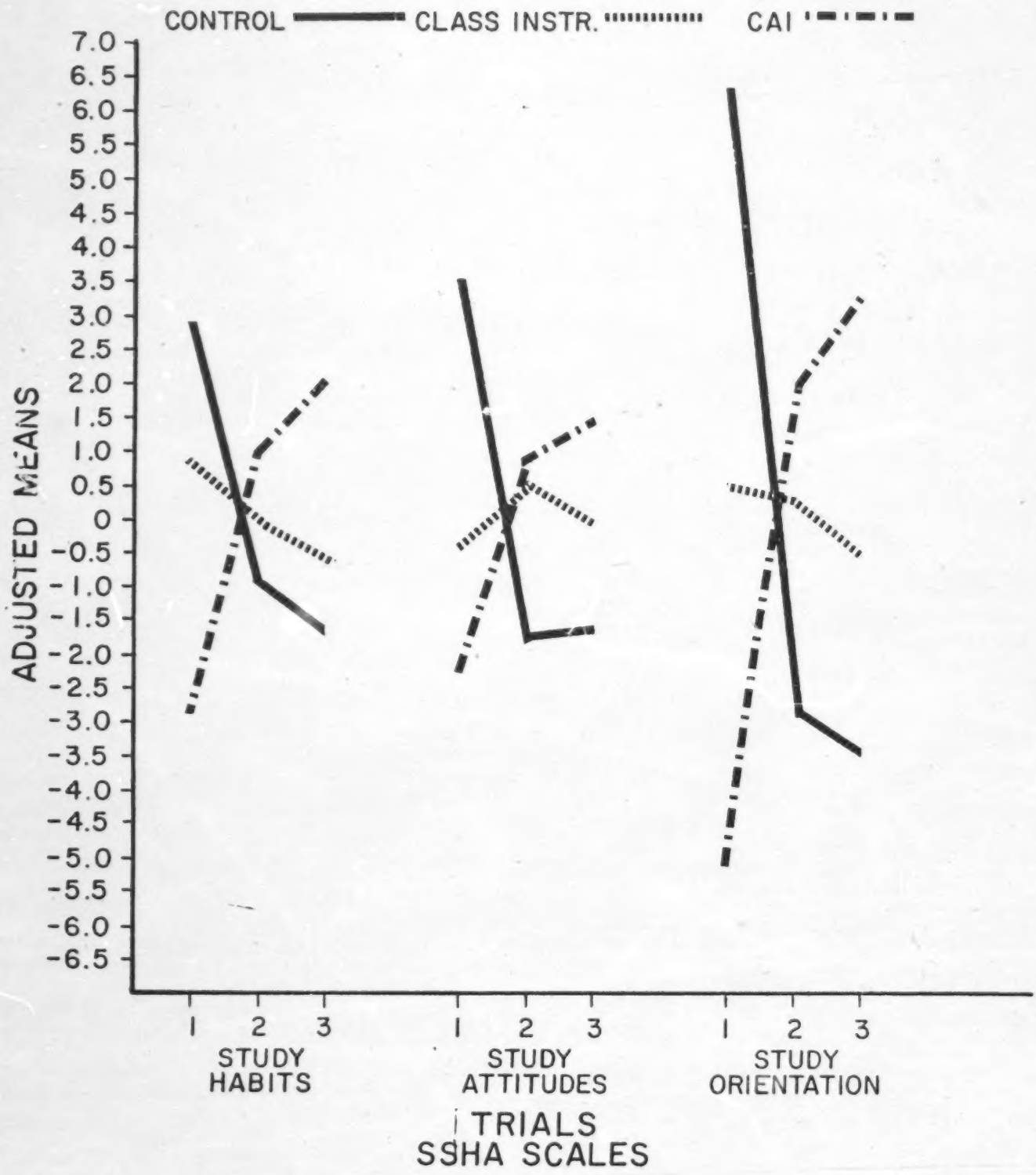

Figure 2: - Ajusted Means on Three Trials for Three Scales (Summations of Primary Scales) of the Survey of Study Habits and Attitudes (SSHA) for CAI, Class Instruction, and Control Groups.